Commonwealth of Kentucky
Division for Air Quality

PERMIT STATEMENT OF BASIS

for
Final Title V/PSD Permit
V-03-031
Gallatin Steel Company
4831 US Highway 42 West
Ghent, KY 41045
February 10, 2004
Andrea Riegler, April Webb
Plant I.D. # 21-077-00018
Application Log # 51083

BACKGROUND

On August 13, 2003, the Division issued a preliminary determination on the Title V/PSD permit for the steel mini-mill owned and operated by Gallatin Steel Company in Ghent, Kentucky. On November 19, 2003, the Division issued a proposed permit that was subsequently reviewed by the EPA. During and after the EPA review, the Division remained in negotiations with Gallatin Steel to resolve outstanding typographical errors and the specifics of the compliance testing protocols outlined in Attachments I and II to the permit. The permit presented with this Statement of Basis represents the final permit based on comments from the EPA review and negotiations with the source.

This permit is a final permit under the Title V program; with this issuance, all open permit applications have now been addressed. Any modifications must be submitted in their entirety to be considered for review. A thorough analysis has been made of all relevant information available that pertains to this source. The Division has concluded that compliance with the terms of the permit will ensure compliance with all air quality requirements. Therefore, it is the Division's final determination that a proposed Title V permit should be issued as conditioned. Further explanation of the changes made to the final permit is provided below.

I. MELT SHOP EMISSIONS TESTING

Integral to the melt shop mass balance is the determination of the building control efficiency. In order to find this value, the permit requires testing of emissions from both the monovents and melt shop doors. As a result of comments made by Gallatin, the Division has changed the testing requirements in the final permit.

The proposed permit required Gallatin to develop testing protocols to measure particulate emissions from monovents and doors in the Melt Shop and to perform both monovent and door testing over a 30-day period in both cold and warm weather. Subsequent to the issuance of the proposed permit, Gallatin submitted testing protocols outlining methods for testing Melt Shop monovents and doors to be performed over a 4-day period.

Monovent Testing Requirements

The proposed permit required Gallatin to test only the monovent closest to the EAF and multiply the results by two to estimate emissions from both monovents. Gallatin's testing proposal, however, outlines a method for testing both the monovents at the same time. The testing protocol developed for Gallatin by Ambient Air Services uses a hybrid test method based on ASTM and NIOSH test methods. The primary modifications revolve around changes to the type of sample pump, the type of filter holder, the mounting of the filter holder on a probed, the total sample time per filter and similar minor variations. This method calls for a single sampler in each monovent moving diagonally through an irregular (depending on structural obstructions and access limitations within the monovent opening) 5 x 5 sampling grid throughout the 4 days of testing.

After review, the Division finds this testing protocol sufficient for the purposes of demonstrating compliance with the permit conditions. The irregularity of the final sampling grid, while a concern, will be reviewed by the Division and observed by a field inspector to insure sampling is as representative as possible.

Melt Shop Door Testing Requirements

In their submission, Gallatin recommended testing only 4 of the 10 Melt Shop doors; specifically, doors ASCRAP, ASLAG, CSLAG and CSCRAP. Gallatin requested that doors M26, M30, M32, M35 and M37 be exempted from testing as they are closed at all times except for pass-through traffic. The Division agrees with both requests and has added the necessary language to the permit. In addition, Gallatin requested that the door labeled M28 be exempted from testing because it is open only during ladle tear-out operations, which occurs approximately 20 hours per week. The Division agrees in part with this request; the Division has determined that this door shall undergo modified testing as described below.

Gallatin submitted two protocols for testing the Melt Shop doors, both taking place over the same 4-day period for monovent testing. The first protocol involves the use of sampling manifolds in each of the doors to be tested. The manifolds connect to a portable analyzer able to measure particulate concentration at rates up to once per second with results logged electronically. In addition to the manifolds, anemometers and thermocouples are placed in each door to electronically record wind speed and temperature.

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In addition to the manifold protocol, Gallatin submitted an alternative, preferred protocol using the same portable particulate analyzer with different anemometer and thermocouple. The alternative protocol involves grid sampling of each door by hand. Measurement data is also recorded by hand. Sampling would proceed through the sampling grid for each door in sequence, continuously throughout the duration of testing. Although both methods use similar equipment, Gallatin feels this method may produce more representative results as it gathers data from the entire area of the door rather than one transect.

After review, the Division finds both protocols will provide valuable information. The manifold method provides a continuous, electronically recorded measurement for all doors. While this method does not account for variation in emissions over the plane of the entire door area, it does ensure that no emission peaks will be missed while sampling in another door. In addition, this method reduces possible human error by electronically recording all measurements. The electronic record can be used to verify observed emissions as well as hand-recorded data from the sampling grid method.

The insufficiencies of the manifold method are, in turn, compensated by concurrently implementing the sampling grid method. The sampling grid method submitted by Gallatin is sufficient for this purpose with only one modification. The grids for each of the doors indicate samples are to be taken in alternate rows and columns, approximately. The Division has determined that this procedure will suffice for rows in the lower half of the doorway; however, for the upper half, samples shall be taken in alternate spaces for every row.

In summary, the Division has determined that both protocols be implemented to establish compliance under the current permit as described below:

1. The 4 Melt Shop doors labeled ASCRAP, ASLAG, CSLAG and CSCRAP will submit to emissions testing under the manifold protocol described above and in Gallatin's submissions, continuously for the duration of testing.

2. The 5 Melt Shop doors labeled ASCRAP, ASLAG, CSLAG, CSCRAP and M28 will submit to emissions testing under the sampling protocol described above and in Gallatin's submissions for 2 series per shift for the duration of testing.

Melt Shop Testing Requirements

The purpose of the original 30-day timeframe was to insure that testing captured worst-case emissions without disrupting Gallatin's production schedule. In lieu of the extended timeframe, however, the Division has determined that 4 days (96 hours) of cold weather testing and 4 days (96 hours) of warm weather testing are sufficient to determine compliance provided the following production requirements are met:

1. All testing shall be preceded by at least 2 days of continuous production at the highest rate achievable under the conditions outlined in this permit.

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2. For the duration of testing, the permittee shall maintain continuous, 24-hour production at the highest rate achievable under the conditions outlined in this permit. The Division recognizes that to meet the condition of continuous, 24-hour production Gallatin might need to operate below the maximum rate achievable under the conditions of the permit.

3. For the duration of testing, all steel melted shall goes towards making viable product.

4. For the duration of testing, all scarp mixes shall contain no more than 35% scrap substitute.

5. The Division reserves the right to deem the test invalid should conditions at the facility be unrepresentative of normal operating conditions as determined by field inspectors familiar with the Gallatin's operation.

II. CHANGES TO PROPOSED PERMIT

1. Section B – Emission Point 0E1, 1. (page 6): the following conditions were added to the permit in response to compliance testing negotiations with the source:

    k. The permittee shall open the following doors only for pass-through traffic: M26, M30, M32, M37 and M35.

    l. The permittee shall only open the door labeled M28 when ladle tear-out operations are underway.

    m. The door labeled A SCRAP shall be maintained at all times with a plastic strip air curtain covering the top 15 feet of the opening.

2. Section B – Emission Point 0E1, 2.b. Compliance Demonstration (page 8): in parts ii. and iii., the word "fugitive" has been corrected to read "monovent and door" as this compliance demonstration pertains only to particulate emissions limited by PSD increment consumption, not fugitive emissions.

3. Section B – Emission Point 0E1, 2.e.ii. (page 11): the SO2 limit for all other products has been changed to 0.49 lb SO2/ton.

4. Section B – Emission Point 0E1, 2.e. Compliance Demonstration ii. (page 11): the SO2 limit for all other products has been changed to 0.49 lb SO2/ton.

5. Section B – Emission Point 0E1, 4.c.i. (page 14): the word "baghouse" was added after "Melt Shop".

6. Section B – Emission Point 0E1, 5.f. (page 16): the next to the citations in the next to last sentence were changed to read "2.c., 2.d. and 2.e. above."

7. Section B – Emission Point 0R1, 6. (page 18): the monthly reporting requirements were removed.

8. Section B – Emission Point 0R2, 6. (page 21): the monthly reporting requirements were removed.

9. Section B – Emission Point 0T1, 1.c. (page 22): the mist eliminator drift loss for Tower #2 was changed to 0.01%.

10. Section B – Emission Point 0S1 and 0S2/0B1 and 0B2, 7.d. (page 39): the conditions for the Slag Conditioner Mixture Silos were deleted.

11. Section C – Insignificant Activities, #13 (page 45): the description was changed to read "Cleanup and cutting of dummy bar at caster."

12. Appendix I – 2. **Testing Requirements** was changed to read (page 59): The permittee shall perform testing according to the following timing guidelines:

II. CHANGES TO PROPOSED PERMIT

a. The permittee shall perform 4 days of cold weather testing and 4 days of warm weather testing.
b. Cold weather testing shall begin no later than 30 days after the testing protocol has been finalized.
c. Warm weather testing will begin no later than 112 days after the last day of cold weather testing and end no later than 180 days after the last day of cold weather testing.
d. All test results shall be submitted to the Division no later than 30 days after the last day of each individual 30-day testing period.

13. Appendix I – 3. **Testing Production Requirements** was added and reads (page 59): For the duration of testing, the permittee shall operate under the following conditions:
    a. All testing shall be preceded by at least 2 days of continuous production at the highest rate achievable under the conditions outlined in this permit.
    b. The permittee shall maintain continuous, 24-hour production at the highest rate achievable under the conditions outlined in this permit.
    c. The permittee shall produce a viable product.
    d. The permittee shall melt scrap mixes containing no more than 35% scrap substitute.
    e. For the testing results to be acceptable, all other Melt Shop activities and processes not specifically referenced must operate under normal conditions as determined by field inspectors.

14. Appendix I – 4. **Monovent Testing Requirements** was changed to read (page 59): For the duration of testing, the permittee shall continuously measure particulate emissions from both monovents according to the hybrid method developed by Ambient Air Services and as approved by the Division.

15. Appendix I – 5. **Melt Shop Door Testing Requirements** was changed to read (page 60): For the duration of testing, the permittee shall:
    a. Continuously measure particulate emissions at each of the 4 Melt Shop doors labeled ASCRAP, ASLAG, CSLAG and CSCRAP under the manifold protocol developed by Gas Cleaning Technologies and as approved by the Division.

    b. Perform 2 series of particulate emission measurements per shift at each of the 5 Melt Shop doors labeled ASCRAP, ASLAG, CSLAG, CSCRAP and M28 under the sampling grid protocol developed by Gas Cleaning Technologies and as approved by the Division.

16. Appendix I – 7. **Failure to Meet Requirements**, the words “one month” we removed before warm weather and cold weather testing in order to more accurately reflect the final testing protocol.